

## SEQUENCE LISTING

Gaarde, William A. Nero, Pamela S.

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<120> Antisense Modulation of Focal Adhesion Kinase
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<130> ISPH-0533
<140> US/09/757,100
<141> 2001-01-09
<150> 09/377,310
<151> 1999-08-19
<150> PCT/US00/18999
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                                                                    286
Ala Ala Tyr Leu Asp Pro Asn Leu Asn His Thr Pro Asn Ser Ser Thr
aag act cac ctg ggt act ggt atg gaa cgt tct cct ggt gca atg gag
Lys Thr His Leu Gly Thr Gly Met Glu Arg Ser Pro Gly Ala Met Glu
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| cga<br>Arg<br>35  | gta<br>Val | tta<br>Leu        | aag<br>Lys       | gtc<br>Val        | ttt<br>Phe<br>40  | cat<br>His | tat<br>Tyr        | ttt<br>Phe       | gaa<br>Glu        | agc<br>Ser<br>45  | aat<br>Asn | agt<br>Ser        | gag<br>Glu        | cca<br>Pro        | acc<br>Thr<br>50  | 382  |
|-------------------|------------|-------------------|------------------|-------------------|-------------------|------------|-------------------|------------------|-------------------|-------------------|------------|-------------------|-------------------|-------------------|-------------------|------|
| acc               | tgg        | gcc               | agt              | att               | atc               | agg        | cat               | gga              | gat               | gct               | act        | gat               | gtc               | agg               | ggc               | 430  |
| Thr               | Trp        | Ala               | Ser              | Ile<br>55         | Ile               | Arg        | His               | Gly              | Asp<br>60         | Ala               | Thr        | Asp               | Val               | Arg<br>65         | Gly               |      |
| atc<br>Ile        | att<br>Ile | cag<br>Gln        | aag<br>Lys<br>70 | ata<br>Ile        | gtg<br>Val        | gac<br>Asp | agt<br>Ser        | cac<br>His<br>75 | aaa<br>Lys        | gta<br>Val        | aag<br>Lys | cat<br>His        | gtg<br>Val<br>80  | gcc<br>Ala        | tgc<br>Cys        | 478  |
| tat<br>Tyr        | gga<br>Gly | ttc<br>Phe<br>85  | cgc<br>Arg       | ctc<br>Leu        | agt<br>Ser        | cac<br>His | ctg<br>Leu<br>90  | cgg<br>Arg       | tca<br>Ser        | gag<br>Glu        | gag<br>Glu | gtt<br>Val<br>95  | cac<br>His        | tgg<br>Trp        | ctt<br>Leu        | 526  |
|                   |            |                   |                  |                   |                   |            |                   |                  |                   |                   |            |                   | gag<br>Glu        |                   |                   | 574  |
| cac<br>His<br>115 | cca<br>Pro | cca<br>Pro        | gag<br>Glu       | gag<br>Glu        | tgg<br>Trp<br>120 | aaa<br>Lys | tat<br>Tyr        | gaa<br>Glu       | ttg<br>Leu        | aga<br>Arg<br>125 | att<br>Ile | cgt<br>Arg        | tat<br>Tyr        | ttg<br>Leu        | cca<br>Pro<br>130 | 622  |
|                   |            |                   |                  |                   |                   |            |                   |                  |                   |                   |            |                   | ttg<br>Leu        |                   |                   | 670  |
|                   |            |                   |                  |                   |                   |            |                   |                  |                   |                   |            |                   | gct<br>Ala<br>160 |                   |                   | 718  |
| gtg<br>Val        | gac<br>Asp | cag<br>Gln<br>165 | gaa<br>Glu       | att<br>Ile        | gct<br>Ala        | ttg<br>Leu | aag<br>Lys<br>170 | ttg<br>Leu       | ggt<br>Gly        | tgt<br>Cys        | cta<br>Leu | gaa<br>Glu<br>175 | ata<br>Ile        | cgg<br>Arg        | cga<br>Arg        | 766  |
|                   |            |                   |                  |                   |                   |            |                   |                  |                   |                   |            |                   | tct<br>Ser        |                   |                   | 814  |
| gaa<br>Glu<br>195 | gta<br>Val | tta<br>Leu        | gaa<br>Glu       | aaa<br>Lys        | gat<br>Asp<br>200 | gtt<br>Val | ggt<br>Gly        | tta<br>Leu       | aag<br>Lys        | cga<br>Arg<br>205 | ttt<br>Phe | ttt<br>Phe        | cct<br>Pro        | aag<br>Lys        | agt<br>Ser<br>210 | 862  |
| tta<br>Leu        | ctg<br>Leu | gat<br>Asp        | tct<br>Ser       | gtc<br>Val<br>215 | aag<br>Lys        | gcc<br>Ala | aaa<br>Lys        | aca<br>Thr       | cta<br>Leu<br>220 | aga<br>Arg        | aaa<br>Lys | ctg<br>Leu        | atc<br>Ile        | caa<br>Gln<br>225 | caa<br>Gln        | 910  |
|                   |            |                   |                  |                   |                   |            |                   |                  |                   |                   |            |                   | att<br>Ile<br>240 |                   |                   | 958  |
|                   |            |                   |                  |                   |                   |            |                   |                  |                   |                   |            |                   | gaa<br>Glu        |                   |                   | 1006 |
|                   |            |                   |                  |                   |                   |            |                   |                  |                   |                   |            |                   | ctg<br>Leu        |                   |                   | 1054 |

| ggc<br>Gly<br>275 | cca<br>Pro        | gaa<br>Glu | gaa<br>Glu | gga<br>Gly | atc<br>Ile<br>280 | agt<br>Ser        | tac<br>Tyr | cta<br>Leu | acg<br>Thr | gac<br>Asp<br>285 | aag<br>Lys        | ggc<br>Gly | tgc<br>Cys | aat<br>Asn        | ccc<br>Pro<br>290 | 1102 |
|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|-------------------|-------------------|------|
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | tca<br>Ser<br>305 |                   | 1150 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | gca<br>Ala        |                   | 1198 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            |                   |                   |      |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | gcg<br>Ala        |                   | 1246 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | gga<br>Gly        |                   | 1294 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | gct<br>Ala        |                   | 1342 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | cgg<br>Arg<br>385 |                   | 1390 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | ata<br>Ile        |                   | 1438 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | att<br>Ile        |                   | 1486 |
| aga<br>Arg        | gaa<br>Glu<br>420 | aga<br>Arg | ata<br>Ile | gaa<br>Glu | ctt<br>Leu        | gga<br>Gly<br>425 | cga<br>Arg | tgt<br>Cys | att<br>Ile | gga<br>Gly        | gaa<br>Glu<br>430 | ggc<br>Gly | caa<br>Gln | ttt<br>Phe        | gga<br>Gly        | 1534 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | ttg<br>Leu        |                   | 1582 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | aga<br>Arg<br>465 |                   | 1630 |
|                   |                   |            |            | _          | _                 |                   |            | _          | _          | _                 |                   | _          |            | cct<br>Pro        |                   | 1678 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | ata<br>Ile        |                   | 1726 |
|                   |                   |            |            |            |                   |                   |            |            |            |                   |                   |            |            | gta<br>Val        |                   | 1774 |

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| aaa        | tac        | agt        | ttg               | gat               | cta        | gca        | tct        | ttg        | atc               | ctg        | tat        | gcc        | tat        | cag               | ctt        | 1822 |
|------------|------------|------------|-------------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------|
| 515        | -          |            | Leu               |                   | 520        |            |            |            |                   | 525        |            |            |            |                   | 530        |      |
| agt<br>Ser | aca<br>Thr | gct<br>Ala | ctt<br>Leu        | gca<br>Ala<br>535 | tat<br>Tyr | cta<br>Leu | gag<br>Glu | agc<br>Ser | aaa<br>Lys<br>540 | aga<br>Arg | ttt<br>Phe | gta<br>Val | cac<br>His | agg<br>Arg<br>545 | gac<br>Asp | 1870 |
|            |            |            | cgg<br>Arg<br>550 |                   |            |            |            |            |                   |            |            |            |            |                   |            | 1918 |
|            |            |            | gga<br>Gly        |                   |            |            |            |            |                   |            |            |            |            |                   |            | 1966 |
|            |            |            | gga<br>Gly        |                   |            |            |            |            |                   |            |            |            |            |                   |            | 2014 |
|            |            |            | cgt<br>Arg        |                   |            |            |            |            |                   |            |            |            |            |                   |            | 2062 |
|            |            |            | gag<br>Glu        |                   |            |            |            |            |                   |            |            |            |            |                   |            | 2110 |
|            |            |            | gat<br>Asp<br>630 |                   |            |            |            |            |                   |            |            |            |            |                   |            | 2158 |
|            |            |            | aat<br>Asn        |                   |            |            |            |            |                   |            |            |            |            |                   | tgc<br>Cys | 2206 |
|            |            |            | gac<br>Asp        |                   |            |            |            |            |                   |            |            |            |            |                   |            | 2254 |
| _          |            | _          | aca<br>Thr        |                   | _          |            | _          |            | _                 | _          | _          |            | _          |                   | _          | 2302 |
|            |            |            | gag<br>Glu        |                   |            |            |            |            |                   |            |            |            |            |                   |            | 2350 |
|            |            |            | gaa<br>Glu<br>710 |                   |            |            |            |            |                   |            |            |            |            |                   |            | 2398 |
|            |            |            | agc<br>Ser        |                   |            |            |            |            |                   |            |            |            |            |                   |            | 2446 |
|            |            |            | tac<br>Tyr        |                   |            |            |            |            |                   |            |            |            |            |                   |            | 2494 |
| gcc        | atg        | gct        | ggc               | agc               | atc        | tat        | cca        | ggt        | cag               | gca        | tct        | ctt        | ttg        | gac               | caa        | 2542 |

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| Ala<br>755        | Met        | Ala        | Gly               | Ser        | Ile<br>760        | Tyr        | Pro        | Gly        | Gln        | Ala<br>765        | Ser        | Leu        | Leu        | Asp        | Gln<br>770        |      |
|-------------------|------------|------------|-------------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------|
|                   |            |            | tgg<br>Trp        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 2590 |
|                   |            |            | gac<br>Asp<br>790 |            |                   |            |            |            |            |                   |            |            |            |            |                   | 2638 |
|                   |            |            | cat<br>His        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 2686 |
|                   |            |            | gat<br>Asp        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 2734 |
| cct<br>Pro<br>835 | gat<br>Asp | gtg<br>Val | aga<br>Arg        | ctc<br>Leu | tct<br>Ser<br>840 | cga<br>Arg | ggc<br>Gly | agt<br>Ser | att<br>Ile | gac<br>Asp<br>845 | agg<br>Arg | gag<br>Glu | gat<br>Asp | gga<br>Gly | agt<br>Ser<br>850 | 2782 |
|                   |            |            | ccg<br>Pro        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 2830 |
|                   |            |            | gca<br>Ala<br>870 |            |                   |            |            |            |            |                   |            |            |            |            |                   | 2878 |
|                   |            |            | gga<br>Gly        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 2926 |
|                   |            |            | gtc<br>Val        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 2974 |
|                   |            |            | gac<br>Asp        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 3022 |
|                   |            |            | gct<br>Ala        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 3070 |
|                   |            |            | tat<br>Tyr<br>950 |            |                   |            |            |            |            |                   |            |            |            |            |                   | 3118 |
|                   |            |            | gcc<br>Ala        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 3166 |
|                   |            |            | gag<br>Glu        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 3214 |
|                   |            |            | atc<br>Ile        |            |                   |            |            |            |            |                   |            |            |            |            |                   | 3262 |

995 1000 1005 1010

agc ctc cag caa gag tac aaa aag caa atg ctg act gct gct cac gcc 3310
Ser Leu Gln Gln Glu Tyr Lys Lys Gln Met Leu Thr Ala Ala His Ala
1015 1020 1025

ctg gct gtg gat gcc aaa aac tta ctc gat gtc att gac caa gca aga 3358

ctg gct gtg gat gcc aaa aac tta ctc gat gtc att gac caa gca aga 3358 Leu Ala Val Asp Ala Lys Asn Leu Leu Asp Val Ile Asp Gln Ala Arg 1030 1035 1040

ctg aaa atg ctt ggg cag acg aga cca cac tga gcctccccta ggagcacgtc 3411 Leu Lys Met Leu Gly Gln Thr Arg Pro His 1045 1050

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Met Glu Arg Val Leu Lys Val Phe His Tyr Phe Glu Ser Asn Ser Glu 35 40 45

Pro Thr Trp Ala Ser Ile Ile Arg His Gly Asp Ala Thr Asp Val 50 55 60

Arg Gly Ile Ile Gln Lys Ile Val Asp Ser His Lys Val Lys His Val 65 70 75 80

Ala Cys Tyr Gly Phe Arg Leu Ser His Leu Arg Ser Glu Glu Val His
85 90 95

Trp Leu His Val Asp Met Gly Val Ser Ser Val Arg Glu Lys Tyr Glu 100 105 110

Leu Ala His Pro Pro Glu Glu Trp Lys Tyr Glu Leu Arg Ile Arg Tyr
115 120 125

Leu Pro Lys Gly Phe Leu Asn Gln Phe Thr Glu Asp Lys Pro Thr Leu

| Asn<br>145 | Phe        | Phe        | Tyr        | Gln        | Gln<br>150 | Val        | Lys        | Ser        | Asp        | Tyr<br>155 | Met        | Leu        | Glu        | Ile        | Ala<br>160 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Asp        | Gln        | Val        | Asp        | Gln<br>165 | Glu        | Ile        | Ala        | Leu        | Lys<br>170 | Leu        | Gly        | Cys        | Leu        | Glu<br>175 | Ile        |
| Arg        | Arg        | Ser        | Tyr<br>180 | Trp        | Glu        | Met        | Arg        | Gly<br>185 | Asn        | Ala        | Leu        | Glu        | Lys<br>190 | Lys        | Sei        |
| Asn        | Tyr        | Glu<br>195 | Val        | Leu        | Glu        | Lys        | Asp<br>200 | Val        | Gly        | Leu        | Lys        | Arg<br>205 | Phe        | Phe        | Pro        |
| Lys        | Ser<br>210 | Leu        | Leu        | Asp        | Ser        | Val<br>215 | Lys        | Ala        | Lys        | Thr        | Leu<br>220 | Arg        | Lys        | Leu        | Ile        |
| Gln<br>225 | Gln        | Thr        | Phe        | Arg        | Gln<br>230 | Phe        | Ala        | Asn        | Leu        | Asn<br>235 | Arg        | Glu        | Glu        | Ser        | Ile<br>240 |
| Leu        | Lys        | Phe        | Phe        | Glu<br>245 | Ile        | Leu        | Ser        | Pro        | Val<br>250 | Tyr        | Arg        | Phe        | Asp        | Lys<br>255 | Glı        |
| Cys        | Phe        | Lys        | Cys<br>260 | Ala        | Leu        | Gly        | Ser        | Ser<br>265 | Trp        | Ile        | Ile        | Ser        | Val<br>270 | Glu        | Let        |
| Ala        | Ile        | Gly<br>275 | Pro        | Glu        | Glu        | Gly        | Ile<br>280 | Ser        | Tyr        | Leu        | Thr        | Asp<br>285 | Lys        | Gly        | Суя        |
| Asn        | Pro<br>290 | Thr        | His        | Leu        | Ala        | Asp<br>295 | Phe        | Thr        | Gln        | Val        | Gln<br>300 | Thr        | Ile        | Gln        | Туі        |
| Ser<br>305 | Asn        | Ser        | Glu        | Asp        | Lys<br>310 | Asp        | Arg        | Lys        | Gly        | Met<br>315 | Leu        | Gln        | Leu        | Lys        | Ile<br>320 |
| Ala        | Gly        | Ala        | Pro        | Glu<br>325 | Pro        | Leu        | Thr        | Val        | Thr<br>330 | Ala        | Pro        | Ser        | Leu        | Thr<br>335 | Ile        |
| Ala        | Glu        | Asn        | Met<br>340 | Ala        | Asp        | Leu        | Ile        | Asp<br>345 | Gly        | Tyr        | Cys        | Arg        | Leu<br>350 | Val        | Asr        |
| Gly        | Thr        | Ser<br>355 | Gln        | Ser        | Phe        | Ile        | Ile<br>360 | Arg        | Pro        | Gln        | Lys        | Glu<br>365 | Gly        | Glu        | Arg        |
| Ala        | Leu<br>370 | Pro        | Ser        | Ile        | Pro        | Lys<br>375 | Leu        | Ala        | Asn        | Ser        | Glu<br>380 | Lys        | Gln        | Gly        | Met        |
| Arg<br>385 | Thr        | His        | Ala        | Val        | Ser<br>390 | Val        | Ser        | Glu        | Thr        | Asp<br>395 | Asp        | Tyr        | Ala        | Glu        | Ile<br>400 |
| Ile        | Asp        | Glu        | Glu        | Asp<br>405 | Thr        | Tyr        | Thr        | Met        | Pro<br>410 | Ser        | Thr        | Arg        | Asp        | Tyr<br>415 | Glu        |
| Ile        | Gln        | Arg        | Glu<br>420 | Arg        | Ile        | Glu        | Leu        | Gly<br>425 | Arg        | Cys        | Ile        | Gly        | Glu<br>430 | Gly        | Glr        |
| Phe        | Gly        | Asp<br>435 | Val        | His        | Gln        | Gly        | Ile<br>440 | Tyr        | Met        | Ser        | Pro        | Glu<br>445 | Asn        | Pro        | Ala        |
| Leu        | Ala        | Val        | Ala        | Tle        | Lvs        | Thr        | Cvs        | Lvs        | Asn        | Cvs        | Thr        | Ser        | Asp        | Ser        | Va l       |

450 455 460

| Arg<br>465 | Glu        | Lys        | Phe        | Leu        | Gln<br>470 | Glu        | Ala        | Leu        | Thr        | Met<br>475 | Arg        | Gln        | Phe        | Asp        | His<br>480 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Pro        | His        | Ile        | Val        | Lys<br>485 | Leu        | Ile        | Gly        | Val        | Ile<br>490 | Thr        | Glu        | Asn        | Pro        | Val<br>495 | Trp        |
| Ile        | Ile        | Met        | Glu<br>500 | Leu        | Cys        | Thr        | Leu        | Gly<br>505 | Glu        | Leu        | Arg        | Ser        | Phe<br>510 | Leu        | Gln        |
| Val        | Arg        | Lys<br>515 | Tyr        | Ser        | Leu        | Asp        | Leu<br>520 | Ala        | Ser        | Leu        | Ile        | Leu<br>525 | Tyr        | Ala        | Tyr        |
| Gln        | Leu<br>530 | Ser        | Thr        | Ala        | Leu        | Ala<br>535 | Tyr        | Leu        | Glu        | Ser        | Lys<br>540 | Arg        | Phe        | Val        | His        |
| Arg<br>545 | Asp        | Ile        | Ala        | Ala        | Arg<br>550 | Asn        | Val        | Leu        | Val        | Ser<br>555 | Ser        | Asn        | Asp        | Cys        | Val<br>560 |
| Lys        | Leu        | Gly        | Asp        | Phe<br>565 | Gly        | Leu        | Ser        | Arg        | Tyr<br>570 | Met        | Glu        | Asp        | Ser        | Thr<br>575 | Tyr        |
| Tyr        | Lys        | Ala        | Ser<br>580 | Lys        | Gly        | Lys        | Leu        | Pro<br>585 | Ile        | Lys        | Trp        | Met        | Ala<br>590 | Pro        | Glu        |
| Ser        | Ile        | Asn<br>595 | Phe        | Arg        | Arg        | Phe        | Thr<br>600 | Ser        | Ala        | Ser        | Asp        | Val<br>605 | Trp        | Met        | Phe        |
| Gly        | Val<br>610 | Cys        | Met        | Trp        | Glu        | Ile<br>615 | Leu        | Met        | His        | Gly        | Val<br>620 | Lys        | Pro        | Phe        | Gln        |
| Gly<br>625 | Val        | Lys        | Asn        | Asn        | Asp<br>630 | Val        | Ile        | Gly        | Arg        | Ile<br>635 | Glu        | Asn        | Gly        | Glu        | Arg<br>640 |
| Leu        | Pro        | Met        | Pro        | Pro<br>645 | Asn        | Cys        | Pro        | Pro        | Thr<br>650 | Leu        | Tyr        | Ser        | Leu        | Met<br>655 | Thr        |
| Lys        | Cys        | Trp        | Ala<br>660 | Tyr        | Asp        | Pro        | Ser        | Arg<br>665 | Arg        | Pro        | Arg        | Phe        | Thr<br>670 | Glu        | Leu        |
| Lys        | Ala        | Gln<br>675 | Leu        | Ser        | Thr        | Ile        | Leu<br>680 | Glu        | Glu        | Glu        | Lys        | Ala<br>685 | Gln        | Gln        | Glu        |
| Glu        | Arg<br>690 | Met        | Arg        | Met        | Glu        | Ser<br>695 | Arg        | Arg        | Gln        | Ala        | Thr<br>700 | Val        | Ser        | Trp        | Asp        |
| Ser<br>705 | Gly        | Gly        | Ser        | Asp        | Glu<br>710 | Ala        | Pro        | Pro        | Lys        | Pro<br>715 | Ser        | Arg        | Pro        | Gly        | Tyr<br>720 |
| Pro        | Ser        | Pro        | Arg        | Ser<br>725 | Ser        | Glu        | Gly        | Phe        | Tyr<br>730 | Pro        | Ser        | Pro        | Gln        | His<br>735 | Met        |
| Val        | Gln        | Thr        | Asn<br>740 | His        | Tyr        | Gln        | Val        | Ser<br>745 | Gly        | Tyr        | Pro        | Gly        | Ser<br>750 | His        | Gly        |
| Ile        | Thr        | Ala<br>755 | Met        | Ala        | Gly        | Ser        | Ile<br>760 | Tyr        | Pro        | Gly        | Gln        | Ala<br>765 | Ser        | Leu        | Leu        |
|            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |            |

Gln Pro Asn Val Glu Asp Ser Thr Val Leu Asp Leu Arg Gly Ile Gly 790 Gln Val Leu Pro Thr His Leu Met Glu Glu Arg Leu Ile Arg Gln Gln Gln Glu Met Glu Glu Asp Gln Arg Trp Leu Glu Lys Glu Glu Arg Phe 825 Leu Lys Pro Asp Val Arg Leu Ser Arg Gly Ser Ile Asp Arg Glu Asp Gly Ser Leu Gln Gly Pro Ile Gly Asn Gln His Ile Tyr Gln Pro Val Gly Lys Pro Asp Pro Ala Ala Pro Pro Lys Lys Pro Pro Arg Pro Gly 870 Ala Pro Gly His Leu Gly Ser Leu Ala Ser Leu Ser Ser Pro Ala Asp Ser Tyr Asn Glu Gly Val Lys Leu Gln Pro Gln Glu Ile Ser Pro Pro 905 Pro Thr Ala Asn Leu Asp Arg Ser Asn Asp Lys Val Tyr Glu Asn Val Thr Gly Leu Val Lys Ala Val Ile Glu Met Ser Ser Lys Ile Gln Pro 935 Ala Pro Pro Glu Glu Tyr Val Pro Met Val Lys Glu Val Gly Leu Ala 950 Leu Arg Thr Leu Leu Ala Thr Val Asp Glu Thr Ile Pro Leu Leu Pro Ala Ser Thr His Arg Glu Ile Glu Met Ala Gln Lys Leu Leu Asn Ser 985 Asp Leu Gly Glu Leu Ile Asn Lys Met Lys Leu Ala Gln Gln Tyr Val Met Thr Ser Leu Gln Gln Glu Tyr Lys Lys Gln Met Leu Thr Ala Ala 1015 1020 His Ala Leu Ala Val Asp Ala Lys Asn Leu Leu Asp Val Ile Asp Gln 1030 1035

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Ala Arg Leu Lys Met Leu Gly Gln Thr Arg Pro His

<220>

<223> antisense sequence

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| ttttgctaga tgctaggtat                     | 20 |
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| 12237 unicibembe bequence                 |    |
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| and the poduction                         |    |
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| gttggcttat cttcagtaaa                     | 20 |
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